

Directorates have role in Antarctic rescue

by Fred Coleman, Materials and Manufacturing Directorate

WRIGHT-PATTERSON AFB, OHIO — People may think that materials and fuels research have little to do with the Air Force's operational mission. Lt. Col. Ed Kinowski, of the New York Air National Guard, begs to differ.

When he and other members of the Schenectady-based 109th Airlift Wing were planning their recent mission to the South Pole to rescue Dr. Jerri Nielson, they called the Air Force Research Laboratory Materials and Manufacturing and Propulsion Directorates.

Nielson discovered a lump on her breast while she was stationed at the National Science Foundation's Amundsen-Scott South Pole Station. She needed to be evacuated for treatment, but the harsh weather of the Antarctic winter delayed rescue attempts.

Carl "Ed" Snyder, a senior research engineer in fluids and lubricants at the Materials Directorate, received a call from Kinowski June 29. The colonel told Snyder, "We don't usually do this, but if we did fly down to the South Pole during their winter, would the performance of the lubricants at temperatures down to minus 80 degrees present a problem?"

Snyder wasn't certain he knew all the different lubricants used on the LC-130, so Kinowski faxed him a list of 13 lubricants and told him that he needed a response in two days. Having spent 37 years in materials research, Snyder only needed one day.

Snyder said he's not always able to deal directly with the people who could benefit from his research.

"This was fantastic," Snyder said. "When they called I just asked them how I could help. It was real short-fused."

The temperatures in the Antarctic drop to minus 80 degrees, and none of the lubricants used in the LC-130 Hercules hydraulics are recommended for use below minus 65 degrees. Snyder provided guidance on which materials could cause a problem if the aircraft stayed on the ground for a long period, such as overnight. He told Kinowski that if they land and take off in a reasonable amount of time, it wouldn't be a problem. And that's what they did.

"I heard that they didn't even shut off the engines," Snyder said. "This seems to have worked. We got them in and out."

Colonel Kinowski also contacted the Propulsion Directorate to ask about problems which they might have with fuels due to the weather.

"Fuels are a somewhat different problem than lubricants, in that we can pick which fuels to use in the aircraft," said Cindy Obringer, fuels engineer at the Propulsion Directorate. "Of course we had slim pickings since the fuel we picked had to be available where we needed it and in Antarctica, that means only two locations. Also because of the long duration we had to refuel at one of the locations."

"The Air Force had already placed special fuel with a low freeze point at McMurdo Station and we already had samples here that had been analyzed so we didn't have to do an analysis, but we did look at the existing fuels and their freeze points," she said. "And we made recommendations on refueling, since they couldn't fly the entire mission without refueling. We recommended that they refuel at McMurdo Air Station and not at the South Pole since the fuel at McMurdo Air Station had a lower freeze point. I also made recommendations on how to refuel; for example we recommended that they check the refueling pumps on the ground at McMurdo Air Station in advance of the mission to assure they would work properly once the aircraft arrived."

Obringer got the call to do the study two days before leaving on vacation and said she was surprised on the last day of her vacation while she was in Fairbanks, Alaska. For the first time in ten days she was watching CNN while having breakfast and saw a clip on the airlift. @

“Before I left on vacation I was so focused on getting the information to the right people that I did not ask about the details of why they wanted to fly to Antarctica,” Obringer said. “It was a perfect ending to my vacation to know that I had played a small part in helping this woman who was on the opposite end of the earth.”

Nielsen was safely evacuated last month, due in part to the advice Obringer and Snyder provided.

“Of course, we are all happy with the success of their mission,” Snyder said. “I’m just glad to have had the opportunity to help.” @